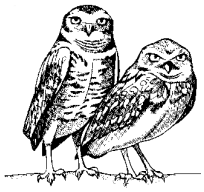

Land Protection Partners

P.O. Box 24020, Los Angeles, CA 90024-0020
Telephone: (310) 276-2306

Reply to Comments Filed With Federal Communications Commission on WT Docket No. 03-187, Avatar Environmental, LLC, Report Regarding Migratory Bird Collisions With Communications Towers

Prepared for:

American Bird Conservancy
Defenders of Wildlife
Forest Conservation Council
The Humane Society of the United States

March 9, 2005

Prepared by:

Travis Longcore, Ph.D.
Catherine Rich, J.D., M.A.

Reply to Comments Filed With Federal Communications Commission on WT Docket No. 03-187, Avatar Environmental, LLC, Report Regarding Migratory Bird Collisions With Communications Towers

1. Introduction

On December 14, 2004, the Federal Communications Commission ("FCC") made available a review of comments received for its Notice of Inquiry on Avian/Communication Tower Collisions. The Notice of Inquiry was issued on August 20, 2003 and closed on December 6, 2003. A team of consultants (Avatar Environmental, LLC, EDM International, Inc., and Pandion Systems, Inc.) was retained by the FCC in May 2004 and reviewed all of the comments received. Their report, "Notice of Inquiry Comment Review Avian/Communication Tower Collisions" ("Avatar Report"), dated September 30, 2004, includes recommendations of actions that might be taken by the FCC. The FCC received comments on the Avatar Report with a closing deadline of February 14, 2005.

Land Protection Partners has been engaged by the American Bird Conservancy, Defenders of Wildlife, Forest Conservation Council, and The Humane Society of the United States to review the scientific merit of the comments raised by other parties in response to the Avatar Report. We downloaded all applicable comments from the FCC's online Electronic Comment Filing System and reviewed them for consistency and scientific merit. Our review does not engage legal issues, such as those concerning jurisdiction and the applicability of specific statutes, but does engage the major policy issues that are based on interpretation of the scientific literature.

2. General Observations

The filings from parties who do not represent the telecommunications/tower industry were generally supportive of the interpretation of the state of the science presented in our own comments on the Avatar Report,[1] and submitted as part of the comments filed on behalf of American Bird Conservancy, Defenders of Wildlife, Forest Conservation Council, and The Humane Society of the United States. For example, Dr. Joelle Gehring submitted a report of her research that shows a greater risk to migratory birds from taller structures, and from guyed towers.[2] The Arizona Game and Fish Department provided comments that were largely consistent with our observations as well. The U.S. Fish and Wildlife Service also submitted comments that were consistent with our review of the scientific literature.

Dr. Gehring's comments, and our previous report submitted to the FCC (as an attachment to the comment letter from the American Bird Conservancy et al.) were the only materi-

1. Longcore, T., C. Rich, and S.A. Gauthreaux, Jr. 2005. Scientific Basis To Establish Policy Regulating Communications Towers To Protect Migratory Birds: Response to Avatar Environmental, LLC, Report Regarding Migratory Bird Collisions With Communications Towers, WT Docket No. 03-187, Federal Communications Commission Notice of Inquiry. Land Protection Partners, Los Angeles, California.
2. Gehring. J. 2005. Letter report to Federal Communications Commission re: Notice of Inquiry comment review Avian/Communication Tower Collisions Final Report.

als submitted in response to the Avatar Report that provided any substantive scientific information or analysis.

The comments submitted by or on behalf of the telecommunications/tower industry are substantially lacking in analytical quality and are, at least in substantial part, inconsistent with the scientific literature. Before addressing the areas of scientifically substantive disagreement (e.g., biological significance, influence of tower height, lighting, and guy wires on bird mortality), we make some general observations on the comments from the telecommunications/tower industry.

2.1. Telecommunications/Tower Industry Selectively Interprets Science To Support the Status Quo and Its Financial Interest

The telecommunications/tower industry's comments are characterized by a selective interpretation of what constitutes reliable information upon which to base policy changes. The comments of Cingular Wireless are particularly illustrative in this regard.

Cingular Wireless asserts that there is an "emerging scientific consensus" that towers < 500 feet are involved in few migratory bird deaths.[3] Cingular Wireless bases this assertion on an unpublished, not peer-reviewed opinion from Dr. Paul Kerlinger prepared for submission to the FCC (File No. A0147567) for an application to construct a communications tower in Hawaii.[4] Cingular Wireless highlights this conclusion from Dr. Kerlinger, while completely ignoring his other conclusions from the same report, "Thus, unguyed towers pose virtually no risk or minimal risk to birds," and, "Towers with these types of lights [L-810; solid red] pose a greater risk than do towers that are unlit or towers that have only flashing lights." Cingular Wireless rejects these conclusions, stating, "There is no consensus on the specific tower characteristics or configurations that increase the risk of avian mortality," before reiterating the belief that "short (< 500 foot) communications towers present little if any risk to migratory or resident birds."[5] The "emerging scientific consensus" that is promoted by Cingular Wireless is contradicted by comments from the cellular trade organization[6] and its expert. This expert, Woodlot Alternatives, concluded, "Both the Avatar and Woodlot reports state that there are insufficient data to draw substantive conclusions between tower height and migratory bird collisions, *particularly the critical height threshold below which little mortality would be expected to occur*."[7] Contrary to the claims of both Cingular Wireless and Woodlot Alternatives, our analysis based on the peer-reviewed literature shows that towers 200–500

3. Cingular Wireless. 14 February 2005. In the matter of effects of communications towers on migratory Birds ("Cingular Wireless"), p. i.
4. Kerlinger. 4 June 2004. Assessment of collision risk to Newell's Shearwater and Hawaiian Petrel at an AT&T Wireless telephone tower in Hawaii. Prepared for use in the matter before the Federal Communications Commission Involving the Naalehu Tower, on the Island of Hawaii, ASR No. 120110.
5. Cingular Wireless, p. 24.
6. PCIA. 14 February 2005. Comments of PCIA on Avatar Environmental, LLC Report ("PCIA").
7. Woodlot Alternatives. 2005. Technical Comment on *Notice of Inquiry Comment Review, Avian/Communication Tower Collisions*, Final (Avatar et al. 2004). Prepared for: CTIA – The Wireless Association, The National Association of Broadcasters, and PCIA – The Wireless Infrastructure Association. Woodlot Alternatives, Topsham, Maine ("Woodlot Alternatives"), p. 2.

feet are responsible for a large proportion (30–40%) of all birds killed at communications towers (see Section 5 below), even though each tower < 500 feet kills fewer birds on average than each tower > 500 feet.[8]

2.2. Comments by Industry Incorrectly Maintain That Science Is Insufficient To Support Policy Changes To Better Protect Avian Species

The telecommunications/tower industry maintains that scientific understanding of deaths of migratory birds at communications towers is insufficient to take any action at all. As was documented by our previous analysis, which was submitted to the FCC by the American Bird Conservancy et al., ample scientific evidence is available to enact policy changes that would substantially reduce bird deaths at towers without interfering with the expansion of telecommunication services or the maintenance of air traffic safety.[9] When it serves a company's or the industry's interest, the company/industry is willing to claim that the science is sufficient, as with Cingular Wireless' claim that few bird mortalities occur at towers < 500 feet tall. Contrary to the industry's unwillingness to accept the recommendations that flow from the available science, resource agencies, which have staff with expertise in these issues, concluded that an ample scientific basis to implement a policy to protect birds exists. This was affirmed by the U.S. Fish and Wildlife Service when it issued the interim tower siting guidelines, which were "based on the best information available,"[10] and by the Arizona Game and Fish Department in its comments on the Avatar Report.

The industry, for its part, clings to the refuted claim that little research has been completed in the last twenty years,[11] despite evidence to the contrary.[12]

---

8. Crawford, R.L., and R.T. Engstrom. 2001. Characteristics of avian mortality at a north Florida television tower: a 29-year study. *Journal of Field Ornithology* 72:380–388. See Longcore, T., C. Rich, and S.A. Gauthreaux, Jr. 2005. Scientific Basis To Establish Policy Regulating Communications Towers To Protect Migratory Birds: Response to Avatar Environmental, LLC, Report Regarding Migratory Bird Collisions With Communications Towers, WT Docket No. 03-187, Federal Communications Commission Notice of Inquiry. Land Protection Partners, Los Angeles, California.
9. Longcore, T., C. Rich, and S.A. Gauthreaux, Jr. 2005. Scientific Basis To Establish Policy Regulating Communications Towers To Protect Migratory Birds: Response to Avatar Environmental, LLC, Report Regarding Migratory Bird Collisions With Communications Towers, WT Docket No. 03-187, Federal Communications Commission Notice of Inquiry. Land Protection Partners, Los Angeles, California.
10. Clark, J.R. 14 September 2000. Service guidance on the siting, construction, operation and decommissioning of communications towers. U.S. Fish and Wildlife Service, Washington, D.C.
11. Cingular Wireless, p. 2.
12. See Gauthreaux, S.A., Jr., and C. Belser. 2005. Effects of artificial night lighting on migrating birds. *In* C. Rich and T. Longcore (eds.), *Ecological consequences of artificial night lighting*. Island Press, Covelo, California. Morris, S.R., A.R. Clark, L.H. Bhatti, and J.L. Glasgow. 2003. Television tower mortality of migrant birds in western New York and Youngstown, Ohio. *Northeastern Naturalist* 10:67–76. Nehring, J., and S. Bivens. 1999. A study of bird mortality at Nashville's WSMV television tower. *Migrant* 70:1–8. Kemper, C.A. 1996. A study of bird mortality at a central Wisconsin TV tower from 1957–1995. *Passenger Pigeon* 58:219–235. Crawford, R.L., and R.T. Engstrom. 2001. Characteristics of avian mortality at a north Florida television tower: a 29-year study. *Journal of Field Ornithology* 72:380–388. Kruse, K. 1996. A study of the effects of transmission towers on migrating birds.

2.3. Non-Expert Comments from Telecommunications/Tower Industry Are Not Grounded in Sound Science and Lack a Sound Biological Basis

The FCC should disregard argumentation, posing as science, on biological topics from telecommunications/tower industry representatives who are unqualified to present expert opinions. Of the many pages of arguments presented on behalf of the telecommunications/tower industry, only the Woodlot Alternatives "technical comments" report appears to be prepared by anyone with knowledge of biology or ornithology, and even the author of this report did not provide any credentials.

The comments from Centerpointe Communications represent the most egregious example of lawyers attempting to practice biology without apparent training in a relevant scientific discipline. The commenter for Centerpointe Communications attempts to analyze the science presented in the Avatar Report, but his arguments and writing reveal a lack of understanding of biology and ornithology. The commenter is likely an excellent telecommunications attorney, but does not evince any credibility when discussing biology.

The commenter does not seem to understand that commonly used bird names may refer to different taxonomic levels (e.g., families, genera, or species). For example, he writes:

> Avatar points out that three species that are deemed at risk, vireos, thrushes and warblers…[13]
>
> Accordingly, attached hereto is a study of vireos, a neotropical migratory bird.[14]
>
> Even when applied to a single species, the vireo…[15]

Taxonomically, there is no such thing as "the vireo"; vireos are members of the Family Vireonidae, which includes many different species. "Vireos, thrushes and warblers" refer to three *families* of birds (Vireonidae, Turdidae, and Parulidae), not "three species." This is basic knowledge for someone trained in the biological sciences. The system of classification used to describe the taxonomic hierarchy is taught in every high school biology class. This taxonomic hierarchy (Kingdom, Phylum, Class, Order, Family, Genus, Species) was devised in the eighteenth century by Linnaeus (*System of Nature*, 1735) and has been used by scientists ever since. The reader can perhaps understand what the commenter intends, but failure to use the proper terminology reveals that the commenter lacks a basic scientific background to analyze avian collisions with towers or to evaluate the scientific literature.

M.S. thesis (Environmental Science and Policy), University of Wisconsin, Green Bay. Ball, L.G., K. Zyskowski, and G. Escalona-Segura. 1995. Recent bird mortality at a Topeka television tower. *Kansas Ornithological Bulletin* 46(4):33–36. Larkin, R.P., and B.A. Frase. 1988. Circular paths of birds flying near a broadcasting tower in cloud. *Journal of Comparative Psychology* 102:90–93.

13. Centerpointe Communications. 2005. Comments of Centerpointe Communications, L.L.C to Avatar Environmental, L.L.C.'s Report ("Centerpointe Communications"), p. 12.
14. Centerpointe Communications, p. 19.
15. Centerpointe Communications, p. 24.

The commenter's lack of knowledge about taxonomy results in claims in service of the client's interests that lack scientific merit. For example, the commenter claims that, "One type of animal which is deemed fully expendable is a bird,"[16] because the federal government kills pest bird species through the Department of Agriculture and allows hunting of birds. This logic might make sense to someone who thinks that there is just one type of bird in the world. To the commenter, apparently, all birds are the same, so a European Starling is the same as an endangered Red-cockaded Woodpecker or an Ovenbird is the same as a Mallard is the same as any other bird in North America. But this is not the case, either in law or biology. There are approximately 900 avian species found in the United States. Only certain species of birds are killed as crop pests or by hunters, and only under permits or licenses issued under the Migratory Bird Treaty Act by the U.S. Fish and Wildlife Service, and even this killing can be controversial. The species of greatest concern for their deaths at communications towers are many species of neotropical migrant songbirds, which are neither hunted nor killed to protect agricultural interests. Indeed, many federal programs are in place to protect these species, and many are identified as birds of conservation concern by the federal government.[17]

The commenter does note that tower kill mortality might be significant to certain sensitive species individually, but quickly veers into scientifically illogical territory by claiming that it does not matter whether certain species are affected more because no mitigation measures are available that would eliminate collisions for species selectively.[18] The commenter apparently does not believe that it is worthwhile to reduce mortality for all bird species at towers and thereby benefit rare species (of conservation concern) at the same time.

As the FCC considers the comments and reply comments on the Avatar Report, it should carefully review the scientific literature cited by commenters and consider the expertise of those commenting and interpreting such research. Comments of those without appropriate credentials should not be afforded the same weight as those with relevant scientific, academic, and professional credentials.

We also have serious concerns over the conclusions in the report from Woodlot Alternatives, despite the purported qualifications of the preparers of that report.

---

16. Centerpointe Communications, p. 20.
17. U.S. Fish and Wildlife Service. 2002. Birds of conservation concern 2002. Division of Migratory Bird Management, Arlington, Virginia. The U.S. Fish and Wildlife Service's Birds of Management Concern List is a statutorily required listing of avian species that may become candidates for listing under the Endangered Species Act without additional conservation action and for which special attention is warranted to prevent declines. Congress dictated such a list be prepared at least every five years as an early warning system to try to prevent birds from becoming listed under the Endangered Species Act.
18. Centerpointe Communications, p. 18. "The problem of ascribing significance to a bird kill based on the bird's species and the species' total population (i.e. managed or endangered or abundant) is that it does nothing to further the core discussion. Since no science is available that shows what may be done to eliminate the threat of collision by any one species, the issue regarding specific species is nearly moot."

2.4. Industry Evinces Misunderstanding of Peer Review

Industry representatives appear to misunderstand the nature of "peer review." The CTIA – The Wireless Association and the National Association of Broadcasters claim in a joint comment, "In this instance, the peer reviewers (including Woodlot and Avatar) have concluded …."[19] The reviews conducted by Woodlot Alternatives and Avatar, however, do not constitute "peer review."

"Peer review" leading to "peer reviewed scientific literature" is not conducted by consultants under contract to an industry group, government agency, or conservation group. Peer review for scientific publication is facilitated by the editor of an academic journal or book, who selects reviewers who have specific knowledge about the subject that they are going to review. The editor usually keeps the identity of the reviewer anonymous so that he or she can speak freely. The editor then weighs those comments with his or her own judgment to reach a determination whether the manuscript under consideration meets the standards of the journal or book in which it is to be published. To our knowledge, neither Avatar nor Woodlot Alternatives has personnel on staff who have published scientific papers on the topic of avian-structure collisions, or who have any special expertise in this area. They therefore would be unlikely to be selected to be peer reviewers.

This proceeding has no peer reviewers. The Avatar Report is not a peer review, the Woodlot Alternatives reports are not peer reviews, and our previous report is not a peer review. We could submit our meta-analysis of the effect of tower height on bird mortality to a scientific journal for peer review, but the outcome would not be available for this proceeding. With the exception of Dr. Gehring's progress report and our meta-analysis of the influence of tower height on bird mortality, it is doubtful that anything else in the record of this proceeding is sufficiently novel to be considered for publication in a scientific journal and thereby sent out for peer review.

3. Tower Kill of Birds Is Biologically Significant

The telecommunications/tower industry criticizes the Avatar Report for failing to assess whether bird deaths at communications towers are biologically significant,[20] but then continues to present a series of specious arguments about biological significance. We agree that the Avatar Report failed in not following through on the promise of assessing whether tower kill of birds is biologically significant. The industry, however, continues to claim that bird kills cannot be significant for two reasons — tower kill is a small percentage of total human-caused mortality, and the total number of birds killed per year is a small percentage of the total number of birds in the United States. *Both of these arguments are wrong*.

19. CTIA – The Wireless Association and National Association of Broadcasters. 2005. Comments of the CTIA – The Wireless Association and National Association of Broadcasters on the Avatar Report ("CTIA and NAB"), p. 16.
20. Cingular Wireless, p. 4.

3.1. Biological Significance of Tower Kill Does Not Depend on Its Percentage of Total Human-Caused Mortality or Total Bird Population

Biological significance can be determined by assessing the number of individuals of each species killed at towers, not through an abstract discussion of total bird populations as if there were only one species of bird in North America.

The telecommunications/tower industry argues that tower kill represents a low percentage of human-caused bird mortality (0.42%) and is therefore insignificant.[21] To the contrary, this percentage is irrelevant to whether tower kill is significant, both biologically and under the National Environmental Policy Act ("NEPA"). Imagine that all of the birds killed at towers are European Starlings. Then one could immediately conclude that the effect is not biologically significant because this species is an invasive exotic afforded no regulatory protection, but this determination would not depend on the number of birds killed by humans in other ways. At the other extreme, imagine that all of the birds killed at towers are Kirtland's Warblers; this most certainly would be biologically significant, because it would cause the rapid extinction of the species. But in this example as well, it would not matter to this determination how many birds are killed by humans in other ways.

To determine significance under NEPA, the evaluating agency must make a reasoned estimate of which species are killed at towers and at what rate they are being killed. We provided such estimates in our previous report filed with the FCC,[22] and the numbers presented there should be used to reach a determination whether tower kill is significant. A human action could cause 0.00001% of total human-caused bird mortality and still be considered significant both biologically and under NEPA if the birds killed were sensitive species, listed under the Endangered Species Act, or otherwise protected by statute, such as by the Migratory Bird Treaty Act.

By the same logic, it is not relevant that total bird deaths at towers each year represent some small percentage of total bird populations. This logic would only apply if there were only one bird species, or if all avian species had the same population size and tower kill affected all species evenly. Again, this percentage is not relevant, because there are hundreds of different bird species, some have small population sizes or are otherwise of conservation concern. Birds killed at towers are disproportionately neotropical migrants, many of which are declining in number and which are of official federal conservation concern.

---

21. Woodlot Alternatives. 2003. An assessment of factors associated with avian mortality at communications towers — a review of existing scientific literature and incidental observations. Topsham, Maine.
22. Longcore, T., C. Rich, and S.A. Gauthreaux, Jr. 2005. Scientific Basis To Establish Policy Regulating Communications Towers To Protect Migratory Birds: Response to Avatar Environmental, LLC, Report Regarding Migratory Bird Collisions With Communications Towers, WT Docket No. 03-187, Federal Communications Commission Notice of Inquiry. Land Protection Partners, Los Angeles, California, Table 1.

The proper course of action from a scientific perspective is for the FCC to reject all assertions that are based on these two erroneous arguments offered by the telecommunications/tower industry.[23]

3.2. Communications Towers Kill a Minimum of Four Million to Five Million Birds Per Year

The telecommunications/tower industry does not provide any real challenge to the consensus that communications towers kill a minimum of four million to five million birds per year. Cingular Wireless cautions that the numbers of birds killed at towers that are reported in the literature should be combined with towers where low mortality occurs to reach a total kill estimate.[24] Centerpointe similarly warns against extrapolating from towers with large kills to all towers.[25] This concern is unfounded; the lower mortality at many towers has already been factored in to the total mortality estimate, originally by Banks,[26] and then by the U.S. Fish and Wildlife Service.[27]

Total mortality estimates have already taken into account the lower mortality at many towers, and indeed the absence of mortality at some towers. Even so, the sheer number of towers results in a staggering number of bird deaths, which are disproportionately species of conservation concern.

3.3. Decreasing Bird Mortality at Single Tower Sites Does Not Necessarily Extrapolate to Decreasing Total Mortality

Woodlot Alternatives refers to the need to investigate "decreasing bird mortality over time with increasing tower numbers."[28] This is a subtle but significant misstatement of the observed trend. The trend is a decrease in number of birds killed over time at particular towers that have been monitored.[29] The broader conclusion, that the total number of birds killed at towers is declining, is not supported by any data or research. Many more towers have been built during the periods covered by studies showing this trend and these new towers are likely killing birds but are not monitored. So even if fewer birds are

---

23. Cingular Wireless, p. 11, Centerpointe Communications, p. 23–24, Woodlot Alternatives, p. 3, CTIA and NAB, p. 15.
24. Cingular Wireless, p. 5.
25. Centerpointe Communications, p. 4.
26. Banks, R.C. 1979. Human related mortality of birds in the United States. *U.S. Fish and Wildlife Service, Special Scientific Report – Wildlife* 215:1–16.
27. Manville, A.M., II, U.S. Fish and Wildlife Service. 14 February 2005. Letter to Federal Communications Commission, WT Docket No. 03-187.
28. Woodlot Alternatives, p. 4. See also Avatar Environmental, LLC, EDM International, Inc., and Pandion Systems, Inc. 2003. Notice of Inquiry Comment Review Avian/Communication Tower Collisions, p. 3-15.
29. Nehring, J., and S. Bivens. 1999. A study of bird mortality at Nashville's WSMV television tower. *Migrant* 70:1–8. Morris, S.R., A.R. Clark, L.H. Bhatti, and J.L. Glasgow. 2003. Television tower mortality of migrant birds in western New York and Youngstown, Ohio. *Northeastern Naturalist* 10:67–76. Crawford, R.L., and R.T. Engstrom. 2001. Characteristics of avian mortality at a north Florida television tower: a 29-year study. *Journal of Field Ornithology* 72:380–388.

killed at each tower, the additional towers could result in the same number or even an increased number of birds being killed overall.

Morris et al. strongly suspect large-scale factors affect the decreasing number of birds salvaged at towers over time, specifically changing weather patterns and overall decreases in migrant populations.[30] While weather patterns may have changed sufficiently in some locations, contributing to the observed declines at specific towers, total population declines of those species found most frequently at towers likely contributes substantially to the observed patterns.[31]

The FCC and regulatory agencies should understand that if the number of birds killed at towers has declined because the populations of those species killed at towers has declined, then the significance of the recent lower mortality is not less.

4. Applicability of Wind Turbine Information

Cingular Wireless asserts that the FCC should not rely on data collected about wind turbines.[32] There are indeed many differences in the species that are killed at wind turbines and those killed at communications towers, but many instances exist where information from wind turbine sites is useful. Some wind turbine sites are in the eastern United States where the bulk of recorded large tower kill events has been recorded. Meteorological towers are found at wind turbine sites, and these towers are often monitored along with the turbines for bird and bat mortality.[33] Bird mortality at these meteorological towers is useful in understanding overall patterns of bird mortality at towers. As long as the data from wind turbine sites include information about meteorological tower construction and lighting, the data may be extrapolated to communications towers.

5. Tower Height

The telecommunications/tower industry is inconsistent in its comments about the Avatar Report's conclusions concerning the role of tower height in bird mortality. The trade organizations and their consultant argue that the data are insufficient to draw any conclusion about the relationship between height and bird mortality. Cingular Wireless suggests that there is an "emerging scientific consensus" that towers < 500 feet present little hazard to birds. The commenter for Centerpointe Communications suggested that taller towers should have lower mortality because birds can see taller towers better than shorter towers. But this commenter also wrote, "one may theorize that birds also die

30. Morris, S.R., A.R. Clark, L.H. Bhatti, and J.L. Glasgow. 2003. Television tower mortality of migrant birds in western New York and Youngstown, Ohio. *Northeastern Naturalist* 10:67–76, pp. 73–74.
31. Nehring, J., and S. Bivens. 1999. A study of bird mortality at Nashville's WSMV television tower. *Migrant* 70:1–8.
32. Cingular Wireless, p. 19.
33. Young, D.P., Jr., W.P. Erickson, R.E. Good, M.D. Strickland, and G.D. Johnson. 2003. Foote Creek Rim final bird and bat mortality report: avian and bat mortality associated with the initial phase of the Foote Creek Rim Wind Power Project, Carbon County, Wyoming. November 1998–June 2002. Final Report. Western EcoSystems Technology, Inc., Cheyenne, Wyoming.

from collisions with trees, rocks and cliffs,"[34] and, "science does not know … whether such collisions are moreover the effect of aberrant bird behavior rather than the existence of specific obstacles to flight."[35] These latter comments are difficult to take seriously — there are no natural features that have the characteristics of > 200-foot communications towers (lighted and extending into migratory altitudes), and it is unreasonable to blame collision with a 1,300-foot radio tower (for example) on "aberrant bird behavior" (without the tower there would be no collision or "aberrant behavior"). The company with "medium" towers argues that medium towers pose no problem while the company with taller towers argues that taller towers are "more visible" and speculates that it is the bird's fault for hitting them.

Although our previous detailed analysis filed with the FCC supports the assertion by Cingular Wireless that towers < 500 feet kill fewer birds than towers > 500 feet, it does not support their conclusion that towers < 500 feet kill insignificant numbers of birds. According to FCC tower registration data,[36] towers between 200 and 500 feet constitute 59% of all towers (including < 199-foot towers registered with the FCC). Even a modest number of birds being killed at these towers could account for ~40% of the total bird mortality at towers. To illustrate this point, we calculated the contribution of bird kills from each tower class to total mortality by multiplying the number of towers in each class by a variable that expresses the relative mortality at short (< 199 feet), medium (200–499 feet), and tall (> 500 feet) towers. We assumed that the number of birds killed at short towers was 1x, while the number killed at medium towers was 10x, and the number at tall towers was 200x. The relation between medium and tall towers is derived from a long-term study of a tall tower that was replaced by a medium tower and showed reduction to one-twentieth to one-thirtieth of the bird mortality.[37] These proportions test Cingular Wireless' claim that if medium towers kill far fewer birds per tower than tall towers, then they pose no conservation concern for migratory bird species.

The results of this exercise (Table 1) show that even if medium towers account for twenty times fewer bird kills than tall towers, their contribution to total bird mortality at towers is ~40% because of the large number of these medium towers. If medium towers kill thirty times fewer birds per tower on average than tall towers, their contribution to total mortality would still be ~30%. If medium towers kill 100 birds per year (as suggested by extrapolating the preliminary results from Dr. Gehring[38]), they should be of great concern to regulators and conservationists alike. Towers 200–499 feet tall certainly contribute to a significant adverse impact biologically and under NEPA, and any strategy to mitigate

34. Centerpointe Communications, p. 14.
35. Centerpointe Communications, p. 15.
36. Federal Communications Commission database, as compiled by Ellen Paul, Ornithological Council, email dated February 18, 2005. Ms. Paul worked with FCC staff members to determine the numbers of towers in each height classification.
37. Crawford, R.L., and R.T. Engstrom. 2001. Characteristics of avian mortality at a north Florida television tower: a 29-year study. *Journal of Field Ornithology* 72:380–388.
38. Gehring, J.L. 2005. Avian collisions with communication towers: a comparison of tower support systems and tower heights. Central Michigan University, Mount Pleasant, Michigan.

the adverse effects of towers that does not include medium towers cannot address 30–40% of the total mortality.

Table 1. Influence of tower number on contribution of towers in three height classes to total bird mortality at towers.

Tower height class (feet)	Number of towers	Percent of towers	Estimated annual mortality per tower	Contribution to total bird deaths at towers
< 199	31,169	37%	1x	3%
200–499	49,650	59%	10x	41%
500–2,100	3,419	4%	200x	56%

6. Tower Lighting and Bird Mortality

Telecommunications/tower industry comments on lighting are consistent with the overall industry position that the science is inadequate to make recommendations. In commenting on the Avatar Report they misinterpret the character and results of the Gauthreaux and Belser study. Centerpointe describes this study as "one, unpublished study," but the research is now in press in a peer-reviewed book.[39]

Centerpointe further confuses the issue by quoting the website of an animal welfare organization, which states "white light is worse than red light,"[40] and an environmental report from Hong Kong that concluded that red strobes were preferable to avoid bird collisions with towers, claiming that these contradicted the findings of Gauthreaux and Belser. They do not. As for white lights, *solid* white lights appear to attract more birds than red lights, if only because they are usually brighter. The statement about white lights on the Animal Protection Institute website is a popular, non-peer reviewed article and does not apply to strobe lights. It is hardly the type of evidence with which to refute the Gauthreaux and Belser study. The Hong Kong environmental report is completely consistent with Gauthreaux and Belser's findings that strobe lights result in less bird accumulation in the airspace around the tower. As we noted in our comments on the Avatar Report, the short duration of the light and a period of darkness between flashes characteristic of a strobe light results in less bird attraction.[41] While we are not aware of studies

39. Gauthreaux, S.A., Jr., and C. Belser. 2005. Effects of artificial night lighting on migrating birds. *In* C. Rich and T. Longcore (eds.), *Ecological consequences of artificial night lighting*. Island Press, Covelo, California.
40. Centerpointe Communications, p. 13.
41. Longcore, T., C. Rich, and S.A. Gauthreaux, Jr. 2005. Scientific Basis To Establish Policy Regulating Communications Towers To Protect Migratory Birds: Response to Avatar Environmental, LLC, Report Regarding Migratory Bird Collisions With Communications Towers, WT Docket No. 03-187, Federal Communications Commission Notice of Inquiry. Land Protection Partners, Los Angeles, California, Section 5.2.

of red strobe lights and bird attraction, we would agree that red strobe lights should attract few migrating birds.

The industry comments and the Avatar Report fail to address the current position of the Federal Aviation Administration ("FAA") on obstruction lighting to prevent avian mortality at communications towers and other structures. In an April 6, 2004 Memorandum from the FAA Program Director for Air Traffic Airspace Management to Regional Air Traffic Division Managers, the FAA states that "medium intensity white strobe lights for nighttime conspicuity is to be considered the preferred system over red obstruction lighting systems to the maximum extent possible without compromising safety."[42]

7. Guy Wires

None of the industry commenters incorporates the new information emerging from Dr. Gehring's study in Michigan, which compares mortality rates at guyed and guyless towers of medium height. After three seasons (two fall and one spring), the results incontrovertibly illustrate significantly greater mortality at guyed towers.[43] Neither the telecommunications/tower industry nor its expert Woodlot Alternatives addresses these results or the overwhelming evidence that guy wires dramatically increase risk to migratory birds. For example, they do not consider the results of Kruse, who correlated the location of dead birds under three guyed towers with the configuration of guy wires, supporting the conclusion that birds attracted to tower lighting collide with guy wires.[44] Even Dr. Paul Kerlinger, in comments for AT&T Wireless supporting the location of a cellular tower, stated that "unguyed towers pose virtually no risk or minimal risk to birds," and, "This conclusion is based on the fact that not a single large scale or multiple bird fatality event has ever been reported from an unguyed tower."[45] Although Dr. Gehring's data indicate that birds are killed at unguyed towers, all experts agree, based on the data available, that guy wires significantly increase bird mortality at towers.

8. Conclusions

The comments filed by others on the Avatar Report did not contain novel information that would change our analysis of the Avatar Report and our interpretation of the existing scientific literature.[46] The conclusions of our previous analysis remain.

---

42. Memorandum from Sabra W. Kaulia, FAA Program Director for Air Traffic Airspace Management to Regional Air Traffic Division Managers dated April 6, 2004.
43. Gehring, J.L. 2005. Avian collisions with communication towers: a comparison of tower support systems and tower heights. Central Michigan University, Mount Pleasant, Michigan.
44. Kruse, K. 1996. A study of the effects of transmission towers on migrating birds. M.S. thesis (Environmental Science and Policy), University of Wisconsin, Green Bay.
45. Kerlinger. 4 June 2004. Assessment of collision risk to Newell's Shearwater and Hawaiian Petrel at an AT&T Wireless telephone tower in Hawaii. Prepared for use in the matter before the Federal Communications Commission Involving the Naalehu Tower, on the Island of Hawaii, ASR No. 120110.
46. Longcore, T., C. Rich, and S.A. Gauthreaux, Jr. 2005. Scientific Basis To Establish Policy Regulating Communications Towers To Protect Migratory Birds: Response to Avatar Environmental, LLC, Report Regarding Migratory Bird Collisions With Communications Towers, WT Docket No. 03-187,

8.1. Avian Mortality at Communication Towers Is Significant

In our previously filed analysis, we concluded that the mortality for the ten avian species killed most frequently at towers ranges from 490,000 individuals per year for the most frequently killed species to 85,000 individuals per year for the tenth most frequently killed species. Upper estimates of mortality are an order of magnitude higher. The top ten most commonly killed birds include two U.S. Fish and Wildlife Service birds of conservation concern, Bay-breasted Warbler and Blackpoll Warbler. We estimate the mortality for Bay-breasted Warblers at 225,000 to 2.25 million per year and for Blackpoll Warblers at 136,00 to 1.36 million per year. The killing of 100,000–200,000 individuals per year of a bird species of regulatory concern is a significant impact both biologically and under NEPA. The extrapolated mortality rate of ~40–400 Red-cockaded Woodpeckers per year is a significant impact for this endangered species.

Even at the lowest end of estimated mortality, 17 other birds of conservation concern each have over 10,000 fatalities per year at communication towers, including 68,000 Northern Waterthrushes, 58,000 Northern Parulas, 57,000 Connecticut Warblers, and 48,000 Cape May Warblers. These numbers could be as high as 680,000 Northern Waterthrushes, 580,000 Northern Parulas, 570,000 Connecticut Warblers, and 480,000 Cape May Warblers. The mortality for birds of conservation concern is biologically significant and fully meets NEPA standards for a significant effect on the environment.

8.2. Tower Lights Should Be Avoided Where Possible; When Required, Lighting System Should Be Strobe Lights Only

Reducing the attraction of birds to towers is a critical factor in minimizing bird deaths at towers. Without attraction, birds may still encounter and be killed in collisions with towers that are sited in migratory pathways, but the sum of the available scientific evidence indicates that mortality would be greatly reduced by using only strobe lights at towers. The evidence we cited in our previously filed analysis fully supports the U.S. Fish and Wildlife Service tower siting guidelines that provide:

> 2. If collocation is not feasible and a new tower or towers are to be constructed, communications service providers should be strongly encouraged to construct towers no more than 199 feet above ground level (AGL), using construction techniques which do not require guy wires (*e.g.,* use a lattice structure, monopole, etc.). **Such towers should be unlighted if Federal Aviation Administration regulations permit**….
>
> 5. If taller (>199 feet AGL) towers requiring lights for aviation safety must be constructed, the minimum amount of pilot warning and obstruction avoidance lighting required by the FAA should be used. **Unless otherwise required by the FAA, only white (preferable) or red strobe lights should be used at night, and these should be the minimum number, minimum intensity, and minimum number of flashes per minute (longest duration between flashes) al-**

Federal Communications Commission Notice of Inquiry. Land Protection Partners, Los Angeles, California.

> **lowable by the FAA. The use of solid red or pulsating red warning lights at night should be avoided. Current research indicates that solid or pulsating (beacon) red lights attract night-migrating birds at a much higher rate than white strobe lights. Red strobe lights have not yet been studied.**[47] [Emphasis added.]

8.3. Guy Wres Should Be Avoided

As discussed above, the scientific evidence and the lack of records of mass bird kills at guyless towers in the reviewed literature is sufficient to conclude that guy wires greatly increase mortality at towers. The FCC could significantly reduce avian mortality at communications towers by allowing construction only of guyless towers unless applicants document that such construction is not feasible. We believe that the evidence supports the scientific merit of the U.S. Fish and Wildlife Service tower siting guidelines on the use of guy wires:

> 2. If collocation is not feasible and a new tower or towers are to be constructed, communications service providers should be strongly encouraged to construct towers no more than 199 feet above ground level (AGL), **using construction techniques which do not require guy wires (*e.g.*, use a lattice structure, monopole, etc.).** Such towers should be unlighted if Federal Aviation Administration regulations permit.
>
> 7. Towers and appendant facilities should be sited, designed and constructed so as to avoid or minimize habitat loss within and adjacent to the tower "footprint". **However, a larger tower footprint is preferable to the use of guy wires in construction.**[48] [Emphasis added.]

8.4. Towers Should Be Less Than 199 Feet Whenever Practicable

Taller towers (> 500 feet) result in higher bird mortality than medium towers (200–499 feet), which in turn result in higher bird mortality than short (< 199 feet) towers. Because towers less than 199 feet do not require obstruction lighting, they are preferable to other towers. Our analysis in this report shows that minimization of mortality at medium towers is important, because these towers likely account for 30–40% of birds killed at towers. Reduction of hazard to birds at towers taller than 200 feet should take place through design (guyless where practicable), siting (away from migratory pathways along ridgelines and watercourses), and lighting (strobe only lighting).

Implementation of the U.S. Fish and Wildlife Service tower siting guidelines would reduce the significant adverse impact on biological resources caused by communications towers. The most recent research, as we have documented, furthers supports these recommendations. The telecommunications industry and its consultant have not adequately considered the most recent research and are wrong to assert that scientific information is

47. Clark, J.R. 14 September 2000. Service guidance on the siting, construction, operation and decommissioning of communications towers. U.S. Fish and Wildlife Service, Washington, D.C.
48. *Id*.

insufficient to develop mitigation measures to reduce the destruction of migratory birds at communications towers.